



## SI3420

### Features

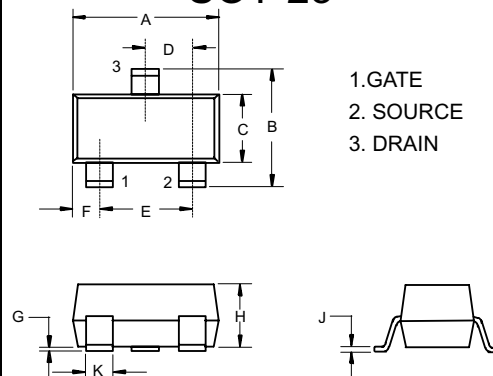
- High dense cell design for extremely low  $R_{DS(ON)}$
- Rugged and reliable
- Lead free product is acquired
- SOT-23 Package
- Marking Code: R20
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Halogen free available upon request by adding suffix "-HF"

### Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
$V_{DS}$	Drain-source Voltage	20	V
$I_D$	Drain Current-Continuous	6	A
$I_{DM}$	Drain Current-Pulsed <sup>a</sup>	25	A
$V_{GS}$	Gate-source Voltage	$\pm 12$	V
$P_D$	Total Power Dissipation	0.35	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient <sup>b</sup>	357	°C/W
$T_J$	Operating Junction Temperature	-55 to +150	°C
$T_{STG}$	Storage Temperature	-55 to +150	°C

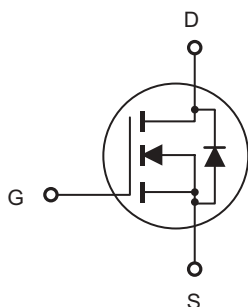
## N-Channel Enhancement Mode Field Effect Transistor

### SOT-23

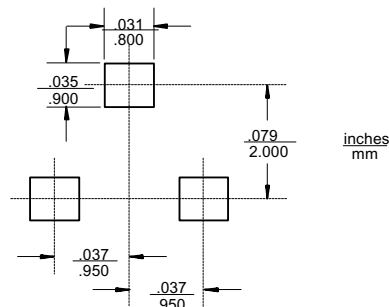


DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.104	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

### Internal Block Diagram



### Suggested Solder Pad Layout



# SI3420



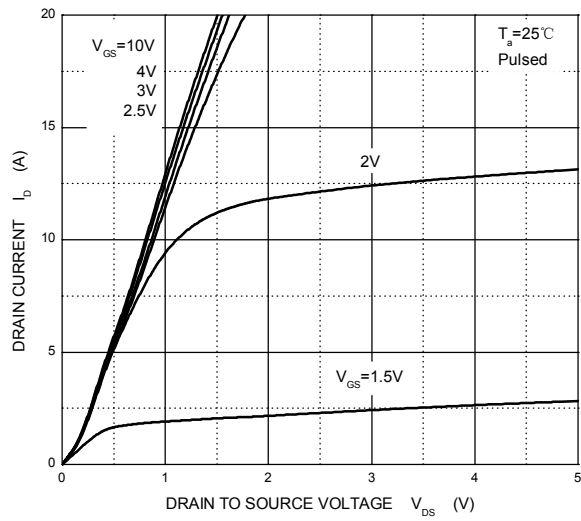
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## Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

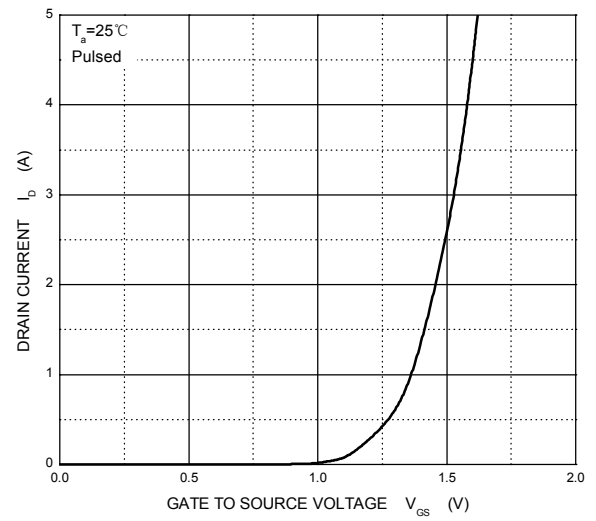
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 16V, V_{GS} = 0V$			1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 12V, V_{DS} = 0V$			$\pm 100$	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.7	3	V
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 6.0A$		19	24	m $\Omega$
		$V_{GS} = 4.5V, I_D = 5.0A$		22	27	m $\Omega$
		$V_{GS} = 2.5V, I_D = 4.0A$		35	42	m $\Omega$
		$V_{GS} = 1.8V, I_D = 2.0A$			74	m $\Omega$
Forward transconductance	$g_{FS}$	$V_{DS} = 5V, I_D = 3.8A$	4			S
Diode forward voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 1.0A$		0.75	1	V
<b>DYNAMIC PARAMETERS*</b>						
Input capacitance	$C_{iss}$	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$		630		pF
Output capacitance	$C_{oss}$			164		pF
Reverse transfer capacitance	$C_{rss}$			137		pF
Gate resistance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		1.5		$\Omega$
<b>SWITCHING PARAMETERS*</b>						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 5V, V_{DS} = 10V,$ $R_L = 1.7\Omega, R_{GEN} = 6\Omega$		5.5		ns
Turn-on rise time	$t_r$			14		ns
Turn-off delay time	$t_{d(off)}$			29		ns
Turn-off fall time	$t_f$			10.2		ns

\* These parameters have no way to verify.

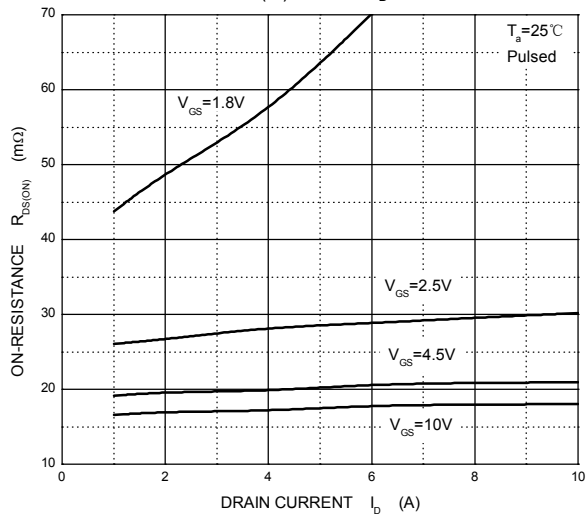
Output Characteristics



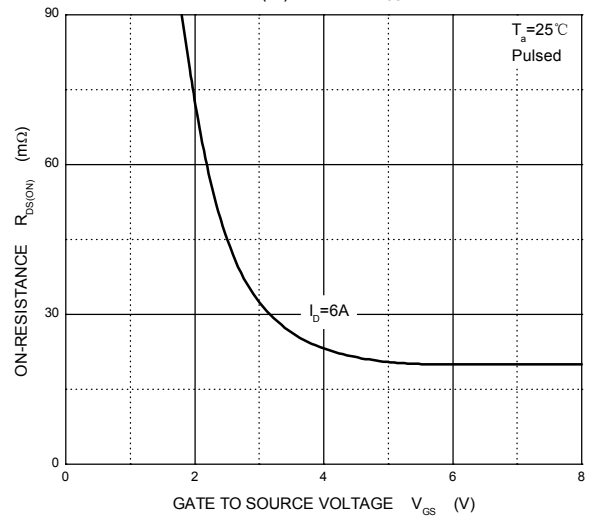
Transfer Characteristics



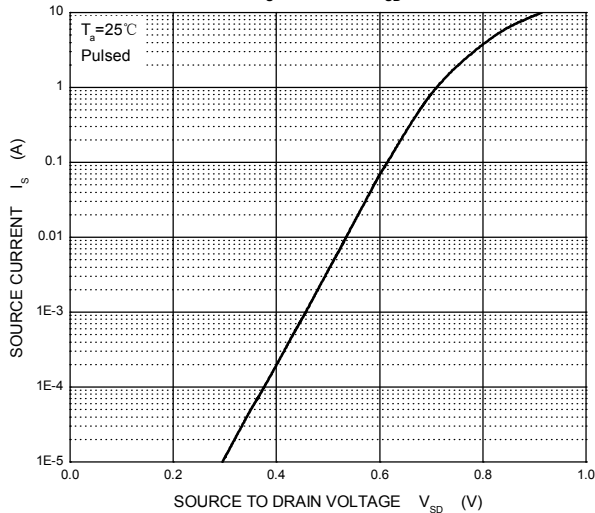
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$



## Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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